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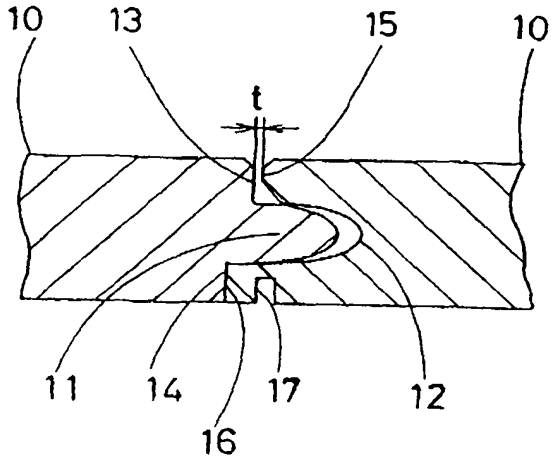
(54)【発明の名称】　木質床材の接合部構造

(57)【要約】

【目的】　木質床材１０が膨張しても、接合部分が浮き上がる等の悪影響を受けない木質床材の接合部構造を提供することを目的とする。

【構成】　端面に突起１１を形成した木質床材１０と、端面に溝１２を形成した木質床材１０とを実継ぎし、突起１１の突出寸法より溝１２の深さ寸法を大きくし、木質床材１０の底面に溝１２に沿って延びる切込み溝１７を形成し、実継ぎ状態にて木質床材１０，１０の上部端面１３，１５間に隙間ｔを形成し、かつ下部端面１４，１６を突き合わせたものである。



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【特許請求の範囲】

【請求項１】　端面に突起を形成した一方の木質床材と、端面に溝を形成した他方の木質床材とを実継ぎしてなる木質床材の接合部構造であって、

前記突起の突出寸法より前記溝の深さ寸法を大きくし、前記溝の下方において前記他方の木質床材の底面に前記溝に沿って延びる切込み溝を形成し、実継ぎ状態にて前記一方の木質床材の前記突起より上部の上部端面と、前記他方の木質床材の前記溝より上部の上部端面との間に隙間を形成し、前記一方の木質床材の前記突起より下部の下部端面と、前記他方の木質床材の前記溝より下部の下部端面とを突き合わせたことを特徴とする木質床材の接合部構造。

【請求項２】　端面に突起を形成した一方の木質床材と、端面に溝を形成した他方の木質床材とを実継ぎしてなる木質床材の接合部構造であって、

前記突起の突出寸法より前記溝の深さ寸法を大きくし、実継ぎ状態にて前記突起の先端と前記溝の底部との間に弾性体を介装し、前記一方の木質床材の前記突起より上部の上部端面と、前記他方の木質床材の前記溝より上部の上部端面との間に隙間を形成し、前記一方の木質床材の前記突起より下部の下部端面と、前記他方の木質床材の前記溝より下部の下部端面との間に隙間を形成したことを特徴とする木質床材の接合部構造。

【請求項３】　端面に突起を形成した一方の木質床材と、端面に溝を形成した他方の木質床材とを実継ぎしてなる木質床材の接合部構造であって、

前記突起の突出寸法より前記溝の深さ寸法を大きくし、前記突起の先端に拡径した係止部を形成し、前記溝の底部に前記係止部が嵌合して係止可能な被係止溝を形成し、実継ぎ状態にて前記一方の木質床材の前記突起より上部の上部端面と、前記他方の木質床材の前記溝より上部の上部端面との間に隙間を形成し、前記一方の木質床材の前記突起より下部の下部端面と、前記他方の木質床材の前記溝より下部の下部端面との間に隙間を形成したことを特徴とする木質床材の接合部構造。

【発明の詳細な説明】

【０００１】

【産業上の利用分野】この発明は、住宅等における木質床材の接合部構造に関するものである。

【０００２】

【従来の技術】従来より、図１５および図１６に示すように、対向端面にそれぞれ突起６１ならびに溝６２を形成してなる木質床材６０がある。図１７は、一対の木質床材６０，６０を実継ぎしてなる接合部構造を示しており、一方の木質床材６０の突起６１より上部の上部端面６３と、他方の木質床材６０の溝６２より上部の上部端面６４とが突き合っている。

【０００３】

【発明が解決しようとする課題】しかしながら上記従来

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の構成によれば、一方の木質床材６０の上部端面６３と、他方の木質床材６０の上部端面６４とが突き合っており、各木質床材６０，６０の含水量が湿気等により増加して膨張すると、互いの接合面に圧縮力が作用して接合部分に浮き上がりが生じる。その結果、木質床材６０，６０に残留圧縮応力が作用して、木質床材６０，６０が変形するという問題があった。

【０００４】この発明の目的は、木質床材が膨張しても悪影響を受けない木質床材の接合部構造を提供することである。

【０００５】

【課題を解決するための手段】請求項１の木質床材の接合部構造は、端面に突起を形成した一方の木質床材と、端面に溝を形成した他方の木質床材とを実継ぎしてなり、突起の突出寸法より溝の深さ寸法を大きくし、溝の下方において他方の木質床材の底面に溝に沿って延びる切込み溝を形成し、実継ぎ状態にて一方の木質床材の突起より上部の上部端面と、他方の木質床材の溝より上部の上部端面との間に隙間を形成し、一方の木質床材の突起より下部の下部端面と、他方の木質床材の溝より下部の下部端面とを突き合わせたことを特徴とするものである。

【０００６】請求項２の木質床材の接合部構造は、端面に突起を形成した一方の木質床材と、端面に溝を形成した他方の木質床材とを実継ぎしてなり、突起の突出寸法より溝の深さ寸法を大きくし、実継ぎ状態にて突起の先端と溝の底部との間に弾性体を介装し、一方の木質床材の突起より上部の上部端面と、他方の木質床材の溝より上部の上部端面との間に隙間を形成し、一方の木質床材の突起より下部の下部端面と、他方の木質床材の溝より下部の下部端面との間に隙間を形成したことを特徴とするものである。

【０００７】請求項３の木質床材の接合部構造は、端面に突起を形成した一方の木質床材と、端面に溝を形成した他方の木質床材とを実継ぎしてなり、突起の突出寸法より溝の深さ寸法を大きくし、突起の先端に拡径した係止部を形成し、溝の底部に係止部が嵌合して係止可能な被係止溝を形成し、実継ぎ状態にて一方の木質床材の突起より上部の上部端面と、他方の木質床材の溝より上部の上部端面との間に隙間を形成し、一方の木質床材の突起より下部の下部端面と、他方の木質床材の溝より下部の下部端面との間に隙間を形成したことを特徴とするものである。

【０００８】

【作用】請求項１の木質床材の接合部構造によると、一方の木質床材の突起の突出寸法より他方の木質床材の溝の深さ寸法を大きくし、両木質床材の上部端面間に隙間を形成し、かつ他方の木質床材の底面に溝に沿って切込み溝を形成したので、木質床材が膨張しても他方の木質床材の切込み溝にて溝の下部先端が変形あるいは破壊す

ることで、圧縮力が吸収される。

【０００９】請求項２の木質床材の接合部構造によると、一方の木質床材の突起の突出寸法より他方の木質床材の溝の深さ寸法を大きくし、両木質床材の上部端面間に隙間を形成し、両木質床材の下部端面間に隙間を形成し、かつ突起の先端と溝の底部との間に弾性体を介装したので、木質床材が膨張しても弾性体が圧縮することで、圧縮力が吸収される。

【００１０】請求項３の木質床材の接合部構造によると、一方の木質床材の突起の突出寸法より他方の木質床材の溝の深さ寸法を大きくし、両木質床材の上部端面間に隙間を形成し、両木質床材の下部端面間に隙間を形成したので、木質床材が膨張しても木質床材に圧縮力が作用しない。しかも、一方の木質床材の突起の先端の係止部を他方の木質床材の溝の底部の被係止溝に係止したので、木質床材が収縮しても、両木質床材が離れない。

【００１１】

【実施例】

第１の実施例

この発明の第１の実施例を図１ないし図５に基づいて説明する。図１は、木質床材１０の平面図、図２は図１のＩＩ－ＩＩ断面図を示している。木質床材１０の対向端面にそれぞれ突起１１ならびに溝１２が形成されている。突起１１より下部の下部端面１４は、突起１１より上部の上部端面１３より後退しており、また溝１２より下部の下部端面１６は、溝１２より上部の上部端面１５より突出している。また、溝１２の下方において木質床材１０の底面に溝１２に沿って延びる切込み溝１７が形成されている。なお、木質床材１０は、例えばハードボードやＭＤＦ等の各種繊維板等にて形成されている。

【００１２】図３および図４は、一対の木質床材１０，１０の接合部分の構成を示しており、一方の木質床材１０の下部端面１４と他方の木質床材１０の下部端面１６とを突き合わせ、かつ他方の木質床材１０の溝１２に、一方の木質床材１０の突起１１を嵌合して実継ぎする。図４に示すように、突起１１の突出寸法より溝１２の深さ寸法が大きく形成されている。また、一方の木質床材１０の上部端面１３と、他方の木質床材１０の上部端面１５との間には、隙間ｔ（例えば、０．３mm～０．４mm）が形成されている。

【００１３】図５は、このようにして４枚の木質床材１０を接続した状態を示している。なお、木質床材１０の含水率は、木質床材１０に収縮が起こり難いように予め低めに管理しておく。このように構成された木質床材１０の接合部構造によると、木質床材１０，１０が膨張すると、互いに突き合った下部端面１４，１６に圧縮力が作用する。その際、他方の木質床材１０の切込み溝１７にて溝１２の下部先端が変形あるいは破壊することで、圧縮力が吸収される。よって、圧縮力が作用しないように隙間ｔを介して配置した上部端面１３，１５、ならびに突起１１の先端と溝１２の底部とが接触せず、木質床材１０，１０に圧縮力が作用しないため、接合部分の浮き上がりを防ぐことができる。すなわち、両木質床材１０，１０の上部端面１３，１５間の隙間ｔ（０．３～０．４mm）の寸法分までは、両木質床材１０，１０が接近しても圧縮力は作用しない。なお、切込み溝１７にて他方の木質床材１０の溝１２の下部先端が変形あるいは破壊するが、木質床材１０の下面におけることであり、見栄えが悪くなったり、破損片にてけがをするといった問題はない。

【００１４】また、木質床材１０，１０に圧縮力が作用しないため、残留圧縮応力も発生せず、元の含水率に戻ったときに木質床材１０が収縮し、接合部分に隙間ｔよりも大きな隙間が発生するようなことはなく、床面の見栄えは損なわれない。なお、両木質床材１０，１０間に形成される隙間ｔについては、０．３～０．４mmと小さく、見栄えを損ねるような心配はない。

【００１５】第２の実施例

この発明の第２の実施例を図６ないし図８に基づいて説明する。図６は、木質床材２０の断面図を示している。木質床材２０の対向端面にそれぞれ突起２１ならびに溝２２が形成されている。突起２１より下部の下部端面２４は、突起２１より上部の上部端面２３より後退しており、また溝２２より下部の下部端面２６は、溝２２より上部の上部端面２５より突出している。また、溝２２の底部には、さらに小溝２７が形成されている。

【００１６】図７および図８は、一対の木質床材２０，２０の接合部分の構成を示しており、一方の木質床材２０の小溝２７に沿って弾性体２８を嵌合する。弾性体２８は、断面形状台形の棒状の部材であり、ゴムや合成樹脂等にて形成されている。そして、他方の木質床材２０の突起２１の先端を弾性体２８に当接して、一方の木質床材２０の溝２２に、他方の木質床材２０の突起２１を嵌合して実継ぎする。図８に示すように、突起２１の突出寸法より溝２２の深さ寸法が大きく形成されている。また、他方の木質床材２０の上部端面２３と、一方の木質床材２０の上部端面２５との間には、隙間ｔ（０．３～０．４mm）が形成されている。さらに、一方の木質床材２０の下部端面２６と、他方の木質床材２０の下部端面２４との間にも隙間が形成されている。なお、木質床材２０の含水率は、木質床材２０に収縮が起こり難いように予め低めに管理しておく。

【００１７】このように構成された木質床材２０の接合部構造によると、木質床材２０，２０が膨張すると、互いに突き合った突起２１の先端と溝２２の底部との間に圧縮力が作用するが、突起２１の先端と溝２２の底部との間に弾性体２８を介装したので、木質床材２０，２０が膨張しても弾性体２８が圧縮したり、あるいは弾性体２８が小溝２７に嵌まり込むことで、圧縮力が吸収される。よって、圧縮力が作用しないように隙間ｔを介して

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配置した上部端面２３，２５、ならびに隙間を介装して配置した下部端面２４，２６が接触せず、木質床材２０，２０に圧縮力が作用しないため、接合部分の浮き上がりを防ぐことができる。すなわち、両木質床材２０，２０の上部端面２３，２５間の隙間ｔ（０．３～０．４ｍｍ）の寸法分までは、両木質床材２０，２０が接近しても圧縮力は作用しない。

【００１８】また、木質床材２０，２０に圧縮力が作用しないため、残留圧縮応力も発生せず、元の含水率に戻ったときに木質床材２０が収縮し、接合部分に隙間ｔよりも大きな隙間が発生するようなことはなく、床面の見栄えは損なわれない。なお、弾性体２８を短尺ものにて形成し、小溝２７に部分的に設置してもよい。

【００１９】第３の実施例

この発明の第３の実施例を図９ないし図１１に基づいて説明する。図９は、木質床材３０の断面図を示している。木質床材３０の対向端面に突起３１ならびに溝３２が形成されている。突起３１より下部の下部端面３４は、突起３１より上部の上部端面３３より後退しており、また溝３２より下部の下部端面３６は、溝３２より上部の上部端面３５より突出している。また、突起３１の先端に沿って固定溝３７が形成されており、この固定溝３７に先端が二股に分かれた弾性体３８が嵌合固定されている。弾性体３８は、ゴムや合成樹脂等からなる長尺の部材にて形成されている。

【００２０】図１０および図１１は、一対の木質床材３０，３０の接合部分の構成を示しており、弾性体３８の二股に分かれた先端を一方の木質床材３０の溝３２の底部に当接して、一方の木質床材３０の溝３２に、他方の木質床材３０の突起３１を嵌合して実継ぎする。図１１に示すように、突起３１の突出寸法より溝３２の深さ寸法が大きく形成されている。また、他方の木質床材３０の上部端面３３と、一方の木質床材３０の上部端面３５との間には、隙間ｔ（０．３～０．４ｍｍ）が形成されている。さらに、一方の木質床材３０の下部端面３６と、他方の木質床材３０の下部端面３４との間にも隙間が形成されている。なお、木質床材３０の含水率は、木質床材３０に収縮が起こり難いように予め低めに管理しておく。

【００２１】このように構成された木質床材３０の接合部構造においても、第２の実施例と同様の効果が得られる。

第４の実施例

この発明の第４の実施例を図１２ないし図１４に基づいて説明する。図１２は、木質床材４０の断面図を示している。木質床材４０の対向端面に突起４１ならびに溝４２が形成されている。突起４１より下部の下部端面４４は、突起４１より上部の上部端面４３より後退しており、また溝４２より下部の下部端面４６は、溝４２より上部の上部端面４５より突出している。また、突起４１

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の先端に沿って上下に拡径した係止部４７が形成されており、この係止部４７の先端に沿ってスリット４８が形成されている。さらに、溝４２の底部に係止部４７が嵌合して係止可能な幅広の被係止溝４９が形成されている。なお、係止部４７は、突起４１と一体の木製の部材であってもよいが、被係止溝４９に嵌合し易いように、ゴムや合成樹脂等の弾性体にて形成してもよい。

【００２２】図１３および図１４は、一対の木質床材４０，４０の接合部分の構成を示しており、係止部４７を被係止溝４９に係止して、一方の木質床材４０の溝４２に、他方の木質床材４０の突起４１を嵌合して実継ぎする。係止部４７を被係止溝４９に係止する際には、係止部４７がスリット４８の存在によって上下方向から圧縮され、円滑に被係止溝４９に係止し、係止後は元の状態に復元して被係止溝４９に引っ掛かるようにして係止する。図１４に示すように、突起４１の突出寸法より溝４２の深さ寸法が大きく形成されている。また、他方の木質床材４０の上部端面４３と、一方の木質床材４０の上部端面４５との間には、隙間ｔ（０．３～０．４ｍｍ）が形成されている。さらに、一方の木質床材４０の下部端面４６と、他方の木質床材４０の下部端面４４との間にも隙間が形成されている。なお、木質床材４０の含水率は、木質床材４０に収縮が起こり難いように予め低めに管理しておく。

【００２３】このように構成された木質床材４０の接合部構造によると、木質床材４０，４０が膨張しても、圧縮力が作用しないように隙間ｔを介して配置した上部端面４３，４５、隙間を介装して配置した下部端面４４，４６、ならびに突起４１の先端の係止部４７と溝４２の底部の被係止溝４９とがいずれも接触しておらず、木質床材４０，４０に圧縮力が作用せず、接合部分の浮き上がりを防ぐことができる。すなわち、両木質床材４０，４０の上部端面４３，４５間の隙間ｔ（０．３～０．４ｍｍ）の寸法分までは、両木質床材４０，４０が接近しても圧縮力は作用しない。

【００２４】また、木質床材４０，４０に圧縮力が作用しないため、残留圧縮応力も発生せず、元の含水率に戻ったときに木質床材４０が収縮し、接合部分に隙間ｔよりも大きな隙間が発生するようなことはなく、床面の見栄えは損なわれない。仮に、隙間ｔの寸法以上に、両木質床材４０，４０が接近し、木質床材４０に残留圧縮応力が生じることとなっても、係止部４７を被係止溝４９に係止したことで、両木質床材４０，４０の水平方向の移動が規制され、木質床材４０，４０が互いに離れて接合部に隙間が生じるのを防止できる。

【００２５】さらに、木質床材４０に収縮力が作用した場合であっても、係止部４７を被係止溝４９に係止したことで、両木質床材４０，４０の水平方向の移動が規制され、木質床材４０，４０が互いに離れて接合部に隙間が生じるのを防止できる。なお、係止部４７は、突起４

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１の先端に部分的に設けてもよい。また、前記各実施例では、木質床材１０，２０，３０，４０が突起１１，２１，３１，４１と溝１２，２２，３２，４２の両方を有する部材であったが、突起１１，２１，３１，４１のみ、あるいは溝１２，２２，３２，４２のみを有する木質床材どうしを接合する構造であってもよい。

【００２６】さらに、木質床材１０，２０，３０，４０の形状は、実施例のような正方形のものに限らず、長方形等の矩形、あるいはそれ以外の形状としてもよい。

【００２７】

【発明の効果】請求項１の木質床材の接合部構造によると、一方の木質床材の突起の突出寸法より他方の木質床材の溝の深さ寸法を大きくし、両木質床材の上部端面間に隙間を形成し、かつ他方の木質床材の底面に溝に沿って切込み溝を形成したので、木質床材が膨張しても他方の木質床材の切込み溝にて溝の下部先端が変形あるいは破壊することで、圧縮力が吸収される。よって、両木質床材の接合部分にて浮き上がりが発生せず、しかも木質床材に残留圧縮応力が発生しないので、木質床材の変形を防止できるという効果が得られる。

【００２８】請求項２の木質床材の接合部構造によると、一方の木質床材の突起の突出寸法より他方の木質床材の溝の深さ寸法を大きくし、両木質床材の上部端面間に隙間を形成し、両木質床材の下部端面間に隙間を形成し、かつ突起の先端と溝の底部との間に弾性体を介装したので、木質床材が膨張しても弾性体が圧縮することで、圧縮力が吸収される。よって、両木質床材の接合部分にて浮き上がりが発生せず、しかも木質床材に残留圧縮応力が発生しないので、木質床材の変形を防止できるという効果が得られる。

【００２９】請求項３の木質床材の接合部構造によると、一方の木質床材の突起の突出寸法より他方の木質床材の溝の深さ寸法を大きくし、両木質床材の上部端面間に隙間を形成し、両木質床材の下部端面間に隙間を形成したので、木質床材が膨張しても木質床材に圧縮力が作用しない。よって、両木質床材の接合部分にて浮き上がりが発生せず、しかも木質床材に残留圧縮応力が発生しないので、木質床材の変形を防止できる。また、一方の木質床材の突起の先端の係止部を他方の木質床材の溝の底部の被係止溝に係止したので、木質床材が収縮しても、両木質床材が離れず、接合部分の表面に大きな隙間

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が生じるのを防止できるという効果が得られる。

【図面の簡単な説明】

【図１】この発明の第１の実施例の木質床材の平面図である。

【図２】図１のＩＩ－ＩＩ断面図である。

【図３】この発明の第１の実施例の木質床材の接合部分の分解斜視図である。

【図４】この発明の第１の実施例の木質床材の接合部分の断面図である。

【図５】この発明の第１の実施例の木質床材の接合状態の平面図である。

【図６】この発明の第２の実施例の木質床材の断面図である。

【図７】この発明の第２の実施例の木質床材の接合部分の分解斜視図である。

【図８】この発明の第２の実施例の木質床材の接合部分の断面図である。

【図９】この発明の第３の実施例の木質床材の断面図である。

【図１０】この発明の第３の実施例の木質床材の接合部分の分解斜視図である。

【図１１】この発明の第３の実施例の木質床材の接合部分の断面図である。

【図１２】この発明の第４の実施例の木質床材の断面図である。

【図１３】この発明の第４の実施例の木質床材の接合部分の分解斜視図である。

【図１４】この発明の第４の実施例の木質床材の接合部分の断面図である。

【図１５】従来例の木質床材の平面図である。

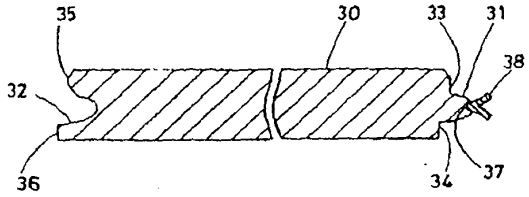
【図１６】図１５のＸＶＩ－ＸＶＩ断面図である。

【図１７】従来例の木質床材の接合部分の断面図である。

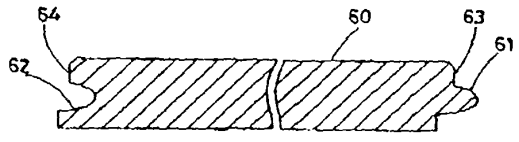
【符号の説明】

１０，２０，３０，４０　木質床材
１１，２１，３１，４１　突起
１２，２２，３２，４２　溝
１７　切込み溝
２８，３８　弾性体
４７　係止部
４９　被係止溝

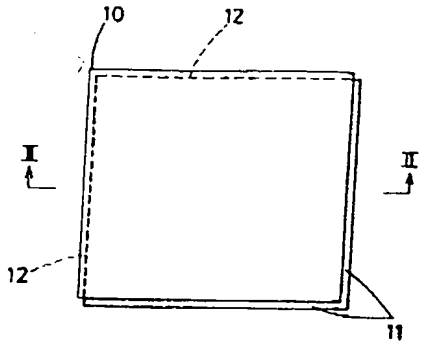
【図９】



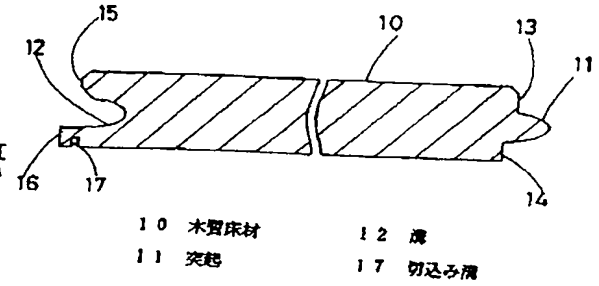
【図１６】



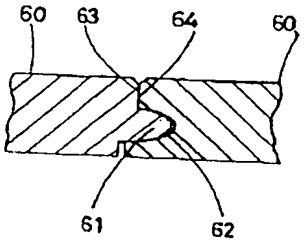
【図１】



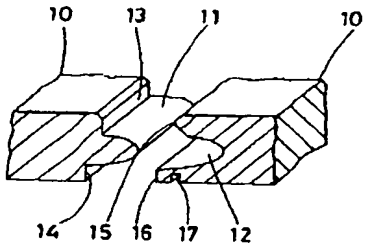
【図２】



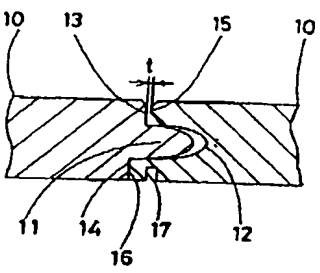
【図１７】



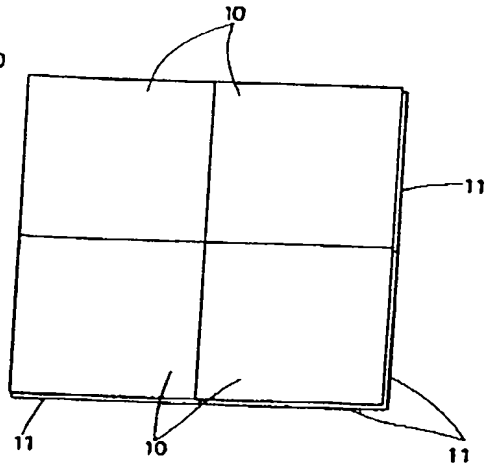
【図３】



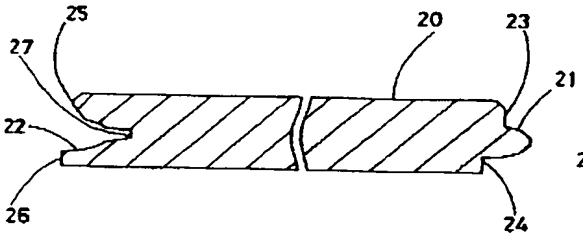
【図４】



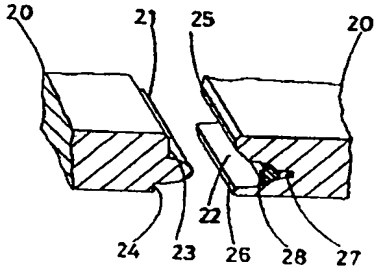
【図５】



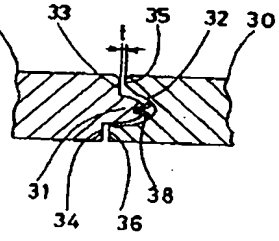
【図６】



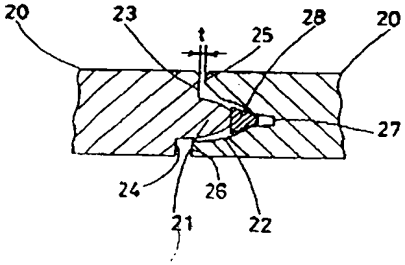
【図７】



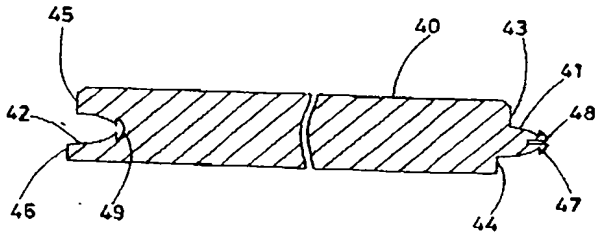
【図１１】



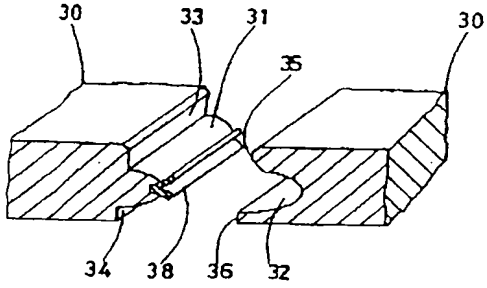
【図８】



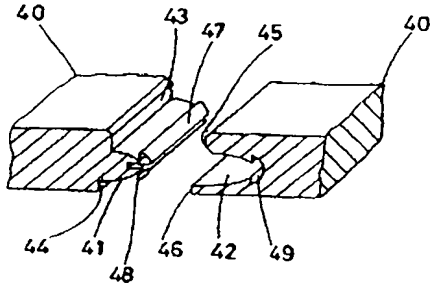
【図１２】



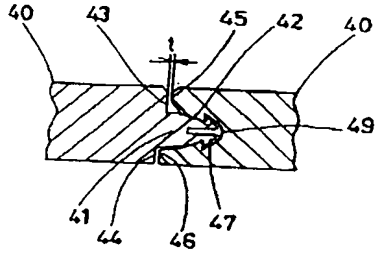
【図１０】



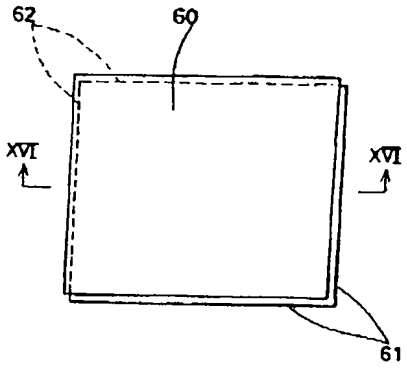
【図１３】



【図１４】



【図１５】



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(54) (Name of the invention) Coupling part structure of ligneous (translator : wooden/woody) floor material

(57)Abstract :

PURPOSE : The purpose of the invention is to provide a coupling part structure of ligneous floor material which receives no adverse influences such as floating of the coupling part, even in case the ligneous floor material expands.

CONSTITUTION : A ligneous floor material 10 with a projection 11 formed on its end surface and a ligneous floor material 10 with a groove 12 formed at its end surface are coupled, the depth dimension of the groove 12 is made larger than the projection dimension of the projection 11, a cut-out groove 17 extending in the parallel direction of the groove 12 is formed in the bottom surface of the ligneous floor material 10; in the coupled state a clearance (t) is formed between the upper end surfaces 13 and 15 of the ligneous floor materials 10 and10, and the bottom end surfaces 14 and 16 are touching each other.

Scope of the patent Claims
(Claim 1) A coupling part structure consisting of one ligneous floor material with a projection formed on an end surface and an other ligneous floor material with a groove formed in an end surface coupled together,
a coupling part structure of ligneous floor material characterized in that the depth dimension of the said groove is made larger than the projection dimension of the said projection, a cut-out groove has been formed in the downward direction of the said groove in the bottom surface of the said other ligneous floor material, extending in the parallel direction of the said groove, in the coupled

state a clearance is formed between the upper end surface above the said projection of the said former ligneous floor material and the upper end surface above the said groove in the said latter ligneous floor material, the lower end surface beneath the said projection of the said former ligneous floor material and the lower end surface beneath the said groove of the said latter ligneous floor material are touching each other.

(Claim 2) A coupling part structure consisting of one ligneous floor material with a projection formed on an end surface and an other ligneous floor material with a groove formed in an end surface coupled together,
a coupling part structure of ligneous floor material characterized in that the depth dimension of the said groove is made larger than the projection dimension of the said projection, in the coupled state an elastic body is interposed between the tip of the said projection and the bottom part of the said groove, a clearance is formed between the upper end surface above the said projection of the said former ligneous floor material and the upper end surface above the said groove in the said latter ligneous floor material, and a clearance is formed between the lower end surface beneath the said projection of the said former ligneous floor material and the lower end surface beneath the said groove of the said latter ligneous floor material.

(Claim 3) A coupling part structure consisting of one ligneous floor material with a projection formed on an end surface and an other ligneous floor material with a groove formed in an end surface coupled together,
a coupling part structure of ligneous floor material characterized in that the depth dimension of the said groove is made larger than the projection dimension of the said projection, on the tip of the said projection a hook-fix part (translator : below this will be called "locking part") with enlarged diameter is formed, in the bottom part of the said groove a receiving hook-fix groove (translator : below this will be called "locking groove") is formed such the said locking part can be inserted and hook-locked in the groove, in the coupled state a clearance is formed between the upper end surface above the said projection of the said former ligneous floor material and the upper end surface above the said groove in the said latter ligneous floor material, a clearance is formed between the lower end surface beneath the said projection of the said former ligneous floor material and the lower end surface beneath the said groove of the said latter ligneous floor material.

(Detailed description of the invention)
(0001)
(Industrial application) This invention relates to a coupling part structure of ligneous floor material in housing and the like.
(0002)
(Description of prior art) Conventionally, as shown in figure 15 and figure 16, there exists ligneous floor material 60 which has a projection 61 and a groove 62 formed in the respective opposing end surfaces. Figure 17 shows a coupling part structure consisting of a pair of ligneous floor materials 60 and 60 which are joined together; the upper end surface 63 which is above the projection 61 of the one ligneous floor material 60 and the upper end surface 64 which is situated above the groove 62 of the second ligneous floor material 60, are touching against each other.
(0003)
(Problems to be solved by the invention) However, according to the aforementioned conventional constitution, the upper end surface 63 from the one ligneous floor material 60 and the upper end surface 64 of the other ligneous floor material 60 are touching against each other, and when, under the influence of humidity and the like, the moisture content of the ligneous floor materials 60 and 60 increases and the ligneous floor materials 60 and 60 expand, compressive forces act mutually on the coupling surfaces, and floating of the coupling part occurs. Consequently, residual compressive stress acts on the ligneous floor materials 60 and 60, and the problem existed that the ligneous floor

materials 60 and 60 were deformed.

(0004)

The purpose of this invention is to provide a coupling part structure of ligneous floor material which is not adversely affected even if the ligneous floor material expands.

(0005)

(Means for solving the problem) The coupling part structure of the ligneous floor material of claim 1 consists of one ligneous floor material with a projection formed on an end surface and a second ligneous floor material with a groove formed in an end surface coupled together, characterized in that the depth dimension of the groove is made larger than the projection dimension of the projection, a cut-out groove is formed below the groove in the bottom surface of the second ligneous floor material and extending in the parallel direction of the groove, in the coupled state a clearance is formed between the upper end surface above the projection of the former ligneous floor material and the upper end surface above the groove in the latter ligneous floor material, the lower end surface beneath the projection of the former ligneous floor material and the lower end surface beneath the groove of the latter ligneous floor material are touching against each other.

(0006) The coupling part structure of ligneous floor material of Claim 2 consists of one ligneous floor material with a projection formed on an end surface and an other ligneous floor material with a groove formed in an end surface coupled together, characterized in that the depth dimension of the groove is made larger than the projection dimension of the projection, in the coupled state an elastic body is interposed between the tip of the projection and the bottom part of the groove, a clearance is formed between the upper end surface above the projection of the former ligneous floor material and the upper end surface above the groove in the latter ligneous floor material, a clearance is formed between the lower end surface beneath the projection of the former ligneous floor material and the lower end surface beneath the groove of the latter ligneous floor material.

(0007) The coupling part structure of ligneous floor material of Claim 3 consists of one ligneous floor material with a projection formed on an end surface and an other ligneous floor material with a groove formed in an end surface coupled together, characterized in that the depth dimension of the groove is made larger than the projection dimension of the projection, on the tip of the projection a locking part with enlarged diameter is formed, and in the bottom part of the groove a locking groove is formed, such the said locking part can be inserted and hook-locked in the groove, in the coupled state a clearance is formed between the upper end surface above the projection of the former ligneous floor material and the upper end surface above the groove in the latter ligneous floor material, a clearance is formed between the lower end surface beneath the projection of the former ligneous floor material and the lower end surface beneath the groove of the latter ligneous floor material.

(0008)

(Functioning) According to the coupling part structure of the ligneous floor material of claim 1, because, compared to the projection dimension of the projection of one ligneous floor material, the depth dimension of a groove of a second ligneous floor material is made larger, and a clearance is formed between the upper end surfaces of both ligneous floor materials, and a cut-out groove is formed in the bottom surface of the latter ligneous floor material extending in the parallel direction of the groove, even if the ligneous floor material expands, by the fact that, at the cut-out groove of the latter ligneous floor material the end tip beneath the groove is deformed or is destroyed, compressive forces are absorbed.

(0009) According to the coupling part structure of the ligneous floor material of claim 2, because, compared to the projection dimension of the projection of one ligneous floor material, the depth dimension of a groove of a second ligneous floor material is made larger, and a clearance is formed between the upper end surfaces of both ligneous floor materials, a clearance is formed between the lower end surfaces of both ligneous floor materials, and an elastic body is interposed between the

tip of the projection and the bottom of the groove, even if the ligneous floor material expands, by the fact that the elastic body is compressed, compressive forces are absorbed.
(0010) According to the coupling part structure of the ligneous floor material of claim 3, because, compared to the projection dimension of the projection of one ligneous floor material, the depth dimension of a groove of a second ligneous floor material is made larger, and a clearance is formed between the upper end surfaces of both ligneous floor materials, and a clearance is formed between the lower end surfaces of both ligneous floor materials, even if the ligneous floor material expands, no compressive forces act on the ligneous floor material. Moreover, as the locking part of the projection of the former ligneous floor material is hook-locked in the locking groove of the bottom of the groove of the latter ligneous floor material, even when the ligneous floor material shrinks, both ligneous floor materials do not separate.

(0011)
First example of embodiment
We explain the first example of embodiment of this invention based on the figures 1 to 5. Figure 1 shows the plane figure of a ligneous floor material 10, figure 2 shows a cross-section according to line II-II of figure 1. In the opposing end surfaces of the ligneous floor material 10, a projection 11 and a groove 12 are formed, respectively. The lower end surface 14 beneath the projection 11 is more retracted than the upper surface 13 situated above the projection 11, and the lower end surface 16 situated below the groove 12 is more protruding than the upper end surface 15 above the groove 12. Also, below the groove 12, in the bottom surface of the ligneous floor material 10, a cut-out groove 17 has been formed, extending in the parallel direction of the groove 12. Further, the ligneous floor material 10 may be formed using all types of fiber boards and the like, for example hardboard, MDF and the like.
(0012) Figures 3 and 4 show the constitution of a coupling part structure of a pair of ligneous floor materials 10 and 10, the lower end surface 14 of the former ligneous floor material 10 and the lower end surface 16 of the latter ligneous floor material 10 touching each other, and coupled together by inserting the projection 11 of the first ligneous floor material 10 in the groove 12 of the latter ligneous floor material 10.
As shown in figure 4, the depth dimension of the groove 12 is formed larger than the projection dimension of the projection 11. Also, a clearance t (for example, 0,3 mm - 0,4 mm) is formed between the upper end surface 13 of the former ligneous floor material 10 and the upper end surface 15 of the latter ligneous floor material 10.
(0013) Figure 5 shows a situation with 4 boards of ligneous floor material 10 joined in this way. Further, the moisture content of the ligneous floor material 10 is controlled beforehand and kept at a low level, in order to make it difficult for shrinking of the ligneous floor material 10 to occur. According to the coupling part structure of ligneous floor material 10 constituted in this way, when the ligneous floor materials 10 and 10 expand, compressive forces act on the mutually touching lower end surfaces 14 and 16. On such occasion, by the fact that at the cut-out groove 17 of the latter ligneous floor material 10 the end tip beneath the groove 12 is deformed or destroyed, compressive forces are absorbed. Consequently, because there is no contact between the upper end surfaces 13 and 15 which are positioned with a clearance t in between in order to avoid that compressive forces should act, and equally between the tip of the projection 11 and the bottom of the groove 12, and no compressive forces act on the ligneous floor materials 10 and 10, floating of the coupling part can be prevented. In other words, even if both ligneous floor materials 10 and 10 approach each other up to the level of the dimension of the clearance t (0,3 - 0,4 mm) between the upper end surfaces 13 and 15 of the two ligneous floor materials 10 and 10, no compressive forces are acting. Further, at the cut-out groove 17 the end tip beneath the groove 12 of the latter ligneous floor material 10 is deformed or destroyed, but this is something which occurs at the lower side of the ligneous floor material 10, and there is no such problem as deterioration of the esthetic aspect or injuries caused by the debris.

(0014) Also, because no compressive forces act on the ligneous floor materials 10 and 10, no residual compressive stress is generated, and when the ligneous floor material 10 shrinks when it returns to the original percentage of moisture contents, no clearances larger than clearance t appear at the coupling part, and there is no damage to the esthetic aspect of the floor surface. Also, the clearance t which is formed between both ligneous floor materials 10 and 10 is as small as 0,3 to 0,4mm, and there is no need to worry that this would adversely affect the appearance of the material.

(0015) Second example of embodiment

We explain the second example of embodiment of this invention based on the figures 6 to 8. Figure 6 shows a cross-section of a ligneous floor material 20. In the opposing end surfaces of ligneous floor material 20, a projection 21 and a groove 22 are formed respectively. The lower end surface 24 in the lower direction of projection 21 is more retracted than the upper end surface 23 above the projection 21, and the lower end surface 26 in the lower direction of groove 22 is more protruding than the upper end surface 25 above the groove 22. Also, at the bottom part of groove 22, another small groove 27 has been formed additionally.

(0016) Figures 7 and 8 show the constitution of a coupling part structure of a pair of ligneous floor materials 20 and 20; an elastic body 28 is inserted along the small groove 27 of the one ligneous floor material 20. The elastic body 28 is a rod-shaped material with trapezoidal sectional profile, formed out of rubber, synthetic resin and the like. The tip of the projection 21 of the second ligneous floor material 20 is put against the elastic body 28, the projection 21 of the latter ligneous floor material 20 is inserted into the groove 22 of the former ligneous floor material 20 to make the join. As shown in figure 8, the depth dimension of the groove 22 is formed larger than the projection dimension of projection 21. Also, between the upper end surface 25 of the former ligneous floor material 20 and the upper end surface 23 of the latter ligneous floor material, a clearance t (0,3 - 0,4 mm) is formed. Moreover, a clearance is also formed between the lower end surface 26 of the former ligneous floor material 20 and the lower end surface 24 of the latter ligneous floor material 20. Further, the moisture content of the ligneous floor material 20 is controlled beforehand and kept at a low level, in order to make it difficult for shrinking of the ligneous floor material 20 to occur.

(0017) According to the coupling part structure of ligneous floor material 20 constituted in this way, when the ligneous floor materials 20 and 20 expand, compressive forces act between the mutually touching tip of the projection 21 and the bottom part of the groove 22, but as an elastic body 28 has been interposed between the tip of the projection 21 and the bottom part of the groove 22, even if the ligneous floor materials 20 and 20 expand, by the fact that the elastic body 28 is either compressed, or the elastic body 28 is pressed into the small groove 27, the compressive forces are absorbed. Consequently, because there is no contact between the upper end surfaces 23 and 25 which are positioned with a clearance t in between in order to avoid that compressive forces should act, and equally between the lower end surfaces 24 and 26 which are equally positioned with a clearance in between, and no compressive forces act on the ligneous floor materials 20 and 20, floating of the coupling part can be prevented. In other words, even if both ligneous floor materials 20 and 20 approach each other up to the level of the dimension of the clearance t (0,3 - 0,4 mm) between the upper end surfaces 23 and 25 of the two ligneous floor materials 20 and 20, no compressive forces are acting.

(0018) Also, because no compressive forces act on the ligneous floor materials 20 and 20, no residual compressive stress is generated, and when the ligneous floor material 20 shrinks when it returns to the original percentage of moisture contents, no clearances larger than clearance t appear at the coupling part, and there is no damage to the esthetic aspect of the floor surface. Further, the elastic body 28 may also be formed in shorter pieces and be placed in the small groove 27 by sections.

(0019) Third example of embodiment

We explain the third example of embodiment of this invention based on the figures 9 to 11. Figure 9 shows a cross-section of a ligneous floor material 30. In the opposing end surfaces of ligneous floor material 30, a projection 31 and a groove 32 are formed. The lower end surface 34 in the lower direction of projection 31 is more retracted than the upper end surface 33 above the projection 31, and the lower end surface 36 in the lower direction of groove 32 is more protruding than the upper end surface 35 above the groove 32. Also, along the tip part of the projection 31, a fixation groove 37 is formed, in this fixation groove 37 an elastic body 38 which has a bifurcated extremity is inserted and fixed. The elastic body 38 is formed as a long part consisting of rubber, sysnthetic resin or the like.

(0020) Figures 10 and 11 show the constitution of a coupling part structure of a pair of ligneous floor materials 30 and 30; putting the bifurcated tip of the elastic body 38 against the bottom part of the groove 32 of the former ligneous floor material 30, the projection 31 of the latter ligneous floor material 30 is inserted into the groove 32 of the former ligneous floor material 30 to make the join. As shown in figure 11, the depth dimension of the groove 32 is formed larger than the projection dimension of projection 31. Also, between the upper end surface 35 of the former ligneous floor material 30 and the upper end surface 33 of the latter ligneous floor material, a clearance t (0,3 - 0,4 mm) is formed. Moreover, a clearance is also formed between the lower end surface 36 of the former ligneous floor material 30 and the lower end surface34 of the latter ligneous floor material 30. Further, the moisture content of the ligneous floor material 30 is controlled beforehand and kept at a low level, in order to make it difficult for shrinking of the ligneous floor material 30 to occur.

(0021) With the coupling part structure of ligneous floor material 30 constituted in this way also, the same effects are obtained as with the second example of embodiment.

Fourth example of embodiment

We explain the fourth example of embodiment of this invention based on the figures 12 to 14. Figure 12 shows a cross-section of a ligneous floor material 40. In the opposing end surfaces of ligneous floor material 40, a projection 41 and a groove 42 are formed. The lower end surface 44 in the lower direction of projection 41 is more retracted than the upper end surface 43 above the projection 41, and the lower end surface 46 in the lower direction of groove 42 is more protruding than the upper end surface 45 above the groove 42. Also, along the tip part of the projection 41, on both upper and lower side, a locking part with enlarged diameter 47 is formed, and a slit 48 is formed along the tip part of the locking part 47. Moreover, in the bottom part of the groove 42, a locking groove 49 with large width is formed, in a way that makes it possible to insert and hook-fix the locking part 47 into the bottom of the groove 42. Further, the locking part 47 may be a wooden part which constitutes one integrated part together with the projection 41, but it may also be formed from rubber, synthetic resin and the like, to make it easy to insert it in the locking groove 49.

(0022) Figures 13 and 14 show the constitution of a coupling part structure of a pair of ligneous floor materials 40 and 40; fixing the locking part 47 in the locking groove 49, the projection 41 of the latter ligneous floor material 40 is inserted into the groove 42 of the former ligneous floor material 40 to make the join. When fixing the locking part 47 in the locking groove 49, thanks to the existence of the slit 48 the locking part 47 is compressed from the upper and lower direction and is smoothly fixed in the locking groove 49, after insertion it returns to its original shape and is hook-fixed as it is caught in the locking groove 49.

As shown in figure 14, the depth dimension of the groove 42 is formed larger than the projection dimension of projection 41. Also, between the upper end surface 45 of the former ligneous floor material 40 and the upper end surface 43 of the latter ligneous floor material, a clearance t (0,3 - 0,4 mm) is formed. Moreover, a clearance is also formed between the lower end surface 46 of the

former ligneous floor material 40 and the lower end surface 44 of the latter ligneous floor material 40. Further, the moisture content of the ligneous floor material 40 is controlled beforehand and kept at a low level, in order to make it difficult for shrinking of the ligneous floor material 40 to occur.

(0023) According to the coupling part structure of ligneous floor material 40 constituted in this way, even when the ligneous floor materials 40 and 40 expand, between the upper end surfaces 43 and 45 which, in order to avoid that compressive forces should act, are positioned with a clearance t in between, between the lower end surfaces 44 and 46 which are positioned with a clearance in between, and between the locking part 47 of the tip of the projection 41 and the locking groove 48 of the bottom part of the groove 42, no contact is made and no compressive forces act on the ligneous floor materials 40 and 40, and floating of the coupling part can be prevented. In other words, even if both ligneous floor materials 40 and 40 approach each other up to the level of the dimension of the clearance t (0,3 - 0,4 mm) between the upper end surfaces 43 and 45 of the two ligneous floor materials 40 and 40, no compressive forces are acting.

(0024) Also, because no compressive forces act on the ligneous floor materials 40 and 40, no residual compressive stress is generated, and when the ligneous floor material 40 shrinks when it returns to the original percentage of moisture contents, no clearances larger than clearance t appear at the coupling part, and there is no damage to the esthetic aspect of the floor surface. Even in a case where both ligneous floor materials 40 and 40 would approach over a larger distance than the dimension of clearance t and residual compressive stress would be generated in the ligneous floor materials 40, by the fact that the locking part 47 has been locked in the locking groove 49, the movement in the horizontal direction of both ligneous floor materials 40 and 40 is controlled, mutual separation of the ligneous floor materials 40 and 40 and the occurrence of gaps at the coupling part can be prevented.

(0025) Furthermore, even in the case where shrinkage forces would act upon the ligneous floor material 40, by the fact that the locking part 47 has been locked in the locking groove 49, the movement in the horizontal direction of both ligneous floor materials 40 and 40 is controlled, and mutual separation of the ligneous floor materials 40 and 40 and the occurrence of gaps at the coupling part can be prevented. Further, locking part 47 may also be installed partially by sections on the tip of projection 41. Also, in the different aforementioned examples of embodiment, ligneous floor materials 10, 20, 30 and 40 are material parts having both a projection 11, 21, 31 or 41 and a groove 12, 22, 32 or 42, but it may also be a structure that makes a join between ligneous floor materials that have only a projection 11, 21, 31, 41 or only a groove 12, 22, 32, 42.

(0026) Furthermore, the shape of the ligneous floor materials 10, 20, 30 and 40 is not limited to a square shape as in the examples of embodiment, but it may also be a rectangle with oblong shape and the like, or any other shape.

(0027)

(Effect of the invention) According to the coupling part structure of the ligneous floor material of claim 1, because compared to the projection dimension of a projection of one ligneous floor material, the depth dimension of a groove of a second ligneous floor material is made to be larger, a clearance is formed between the upper end surfaces of both ligneous floor materials, and a cut-out groove is formed in the bottom surface of the latter ligneous floor material extending in the parallel direction of the groove, even if the ligneous floor material expands, by the fact that the end part below the groove is deformed or breaks at the cut-out groove of the latter ligneous floor material, compressive forces are absorbed. Consequently, no floating occurs at the coupling part of both ligneous floor materials, and also, because no residual compressive stress is generated in the ligneous floor material, the effect is obtained that deformation of the ligneous floor material can be prevented.

(0028) According to the coupling part structure of the ligneous floor material of claim 2, because compared to the projection dimension of a projection of one ligneous floor material, the depth dimension of a groove of a second ligneous floor material is made to be larger, a clearance is

formed between the upper end surfaces of both ligneous floor materials, a clearance is formed between the lower end surfaces of both ligneous floor materials, and an elastic body is interposed between the tip of the projection and the bottom of the groove, even if the ligneous floor material expands, by the fact that the elastic body is compressed, compressive forces are absorbed. Consequently, no floating occurs at the coupling part of both ligneous floor materials, and also, because no residual compressive stress is generated in the ligneous floor material, the effect is obtained that deformation of the ligneous floor material can be prevented.

(0029) According to the coupling part structure of the ligneous floor material of claim 3, because compared to the projection dimension of a projection of one ligneous floor material, the depth dimension of a groove of a second ligneous floor material is made to be larger, a clearance is formed between the upper end surfaces of both ligneous floor materials, a clearance is formed between the lower end surfaces of both ligneous floor materials, even if the ligneous floor material expands, no compressive forces act on the ligneous floor material. Consequently, no floating occurs at the coupling part of both ligneous floor materials, and also, because no residual compressive stress is generated in the ligneous floor material, deformation of the ligneous floor material can be prevented. Also, because the locking part of the tip of the projection of the one ligneous floor material has been locked in the locking groove in the bottom of the groove of the latter ligneous floor material, the effect is obtained that, even if the ligneous floor material shrinks, both ligneous floor materials do not separate from each other, and the occurrence of a large gap in the surface of the joint part can be prevented.

(Explanation of the drawings)

(Figure 1) This is the plane figure of a ligneous floor material of the first example of embodiment of this invention.

(Figure 2) This is a cross-section according to line II-II of figure 1.

(Figure 3) This is a drawing at an oblique angle of a disassembled coupling part of ligneous floor material of the first example of embodiment of this invention.

(Figure 4) This is a cross-section of a coupling part of ligneous floor material of the first example of embodiment of this invention.

(Figure 5) This is a plane figure of the coupled state of ligneous floor materials of the first example of embodiment of this invention.

(Figure 6) This is a cross-sectional view of ligneous floor material of the second example of embodiment of this invention.

(Figure 7) This is a drawing at an oblique angle of a disassembled coupling part of ligneous floor material of the second example of embodiment of this invention.

(Figure 8) This is a cross-section of a coupling part of ligneous floor material of the second example of embodiment of this invention.

(Figure 9) This is a cross-sectional view of ligneous floor material of the third example of embodiment of this invention.

(Figure 10) This is a drawing at an oblique angle of a disassembled coupling part of ligneous floor material of the third example of embodiment of this invention.

(Figure 11) This is a cross-section of a coupling part of ligneous floor material of the third example of embodiment of this invention.

(Figure 12) This is a cross-sectional view of ligneous floor material of the fourth example of embodiment of this invention.

(Figure 13) This is a drawing at an oblique angle of a disassembled coupling part of ligneous floor material of the fourth example of embodiment of this invention.

(Figure 14) This is a cross-section of a coupling part of ligneous floor material of the fourth example of embodiment of this invention.

(Figure 15) This is a plane figure of a conventional ligneous floor material.

(Figure 16) This is a cross-section according to line XVI - XVI of figure 15.

(Figure 17) This is a cross-section of a coupling part of conventional ligneous floor material.

(Explanation of symbols)

10, 20, 30, 40	ligneous floor material
11, 21, 31, 41	projection
12, 22, 32, 42	groove
17	cut-out groove
28, 38	elastic body
47	locking part
49	locking groove